

Surface Area

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Find the surface area of a cube with edges of 4 cm

Step 1 · Area of one face

$$4 \times 4 = 16 \text{ cm}^2$$

Step 2 · A cube has 6 identical faces

$$6 \times 16 = 96 \text{ cm}^2$$

Answer: 96 cm²

Check: Its net is six 4 cm squares: 6×16 ✓

2. Now try one with the steps

Find the surface area of a cuboid 5 cm × 3 cm × 2 cm

Step 1 · Top and bottom

Step 2 · Front and back

Step 3 · Two ends

Step 4 · Add

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Find the surface area of a cube with edges of 3 cm. [1]

2. How many faces does a triangular prism have, and what shapes are they? [1]

3. Find the surface area of a cuboid measuring 5 cm × 4 cm × 3 cm. [2]

4. Find the surface area of a cube with edges of 10 cm. [1]
- _____
- _____
5. A cube has a surface area of 150 cm^2 . How long is each edge? [2]
- _____
- _____
6. A triangular prism is 12 cm long. Its ends are right-angled triangles with sides 6 cm, 8 cm and 10 cm. Find its surface area. [3]
- _____
- _____
- _____
7. Find the curved surface area of a cylinder with radius 5 cm and height 8 cm. Leave your answer in terms of π . [2]
- _____
- _____
8. Find the total surface area of the same cylinder (radius 5 cm, height 8 cm) in terms of π . [2]
- _____
- _____
9. The four walls of a room are 2.5 m high. The room is 4 m long and 3 m wide. Find the total area of the walls. [2]
- _____
- _____
10. One tin of paint covers 12 m^2 . How many tins are needed to paint 35 m^2 of wall once? [1]
- _____
- _____
11. Find the total surface area of a cylinder with radius 2 cm and height 7 cm, to 1 decimal place. [3]
- _____
- _____
- _____
12. An open box (no lid) measures $30 \text{ cm} \times 20 \text{ cm}$ and is 10 cm tall. Find the area of card needed to make it. [3]
- _____
- _____
- _____

13. A paper label wraps exactly round the curved side of a can with diameter 7 cm and height 11 cm. [2]
Find the area of the label, to 1 decimal place.

14. Find the surface area of a cuboid measuring $2.5 \text{ m} \times 2 \text{ m} \times 1.2 \text{ m}$. [2]

4. Before you hand it in

Surface area of a $5 \times 3 \times 2$ cuboid = $15 + 10 + 6 = 31 \text{ cm}^2$

A cuboid has SIX faces in three matching pairs. Double it: $2 \times 31 = 62 \text{ cm}^2$. Sketching the net stops you missing faces.

Giving a surface area in cm^3

Surface area is an AREA, so it is in square units (cm^2). Volume, the space inside, is in cubic units (cm^3).

Cylinder surface area = $\pi r^2 + 2\pi rh$

A closed cylinder has a top AND a bottom: $2\pi r^2 + 2\pi rh$. Only an open tube or a cup leaves one out.

Using the triangle's height instead of its sloping side for the third rectangle of a prism

Each rectangle's width is one side of the triangle. For a 3-4-5 triangle the sloping face is 5 cm wide.